What is claimed is:

1. (ORIGNAL) A method for magnetic resonance imaging in which it is desired to eliminate MR signals of selected tissues, fluid or body components in a target area of an object to be imaged, comprising the steps of:

applying an initial RF inversion pulse to invert the magnetization of the selected tissues, fluid or body component;

successively applying one or more RF inversions pulses;

applying a plurality of excitation pulses for acquisition of MR image data; and

interleaving the application of the plurality excitation pulses and the application of the RF inversion pulses so that at least one of the plurality of excitation pulses follows in a time sequence the application of one of the applied RF inversion pulses.

2. (ORIGINAL) A method for magnetic resonance imaging in which it is desired to eliminate MR signals of selected tissues, fluid or body components in a target area of an object to be imaged, comprising the steps of:

applying an initial RF inversion pulse to invert the magnetization of the selected tissues, fluid or body component;

successively applying one or more RF inversions pulses;

acquiring MR image data; and

sequencing the acquisition of MR image data so image data is being acquired following in a time sequence the application of one of the applied RF inversion pulses.

3. (ORIGINAL) The method of claim 2, wherein said acquiring includes acquiring one of a plurality of slices or 3-dimensional MR image data following in a time sequence the application of one of the applied RF inversion pulses.

4. (ORIGINAL) The method of claim 3, wherein said acquiring is performed such that one of the plurality of slices or 3-D image data acquisitions occurs at a time preceding the

zero-crossing point for longitudinal magnetization of one of the applied inversion pulses and so each of the other of the plurality of slices and 3-D image data acquisitions occurs at or following the zero-crossing point for longitudinal magnetization of said one of the applied inversion pulses.

5. (ORIGINAL) The method of any of claims 1 or 2, wherein the successively applied RF inversion pulses are applied in a time sequence so as to essentially maintain the magnetization of the selected tissues, fluid or body component at or about the zero-crossing point of the longitudinal magnetization.

6. (ORIGINAL) The method of any of claims 1 or 2, wherein said successively applying includes successively applying a plurality or more of RF inversions pulses.

7. (ORIGINAL) The method of claim 6, further comprising the steps of:

applying a plurality of excitation pulses for acquisition of MR image data; and

interleaving the application of the plurality excitation pulses and the application of the initial RF inversion pulse and the plurality of successively applied RF inversion pulses so that each of the plurality of excitation pulses follows in a time sequence the application of either of the initial RF inversion pulse or the plurality of successively applied RF inversion pulses.

8. (ORIGINAL) The method of claim 6, further comprising the steps of:

acquiring MR image data; and

sequencing the acquisition of MR image data so image data is acquired following in a time sequence the application of either of the initial RF inversion pulse or the plurality of successively applied RF inversion pulses.

9. (ORIGINAL) The method of claim 8, wherein said acquiring includes acquiring one of a plurality of slices or 3-dimensional MR image data following in a time sequence the

application of either of the initial RF inversion pulse or the plurality of successively applied RF inversion pulses.

10. (ORIGINAL) The method of claim 9, wherein said acquiring is performed such that one of the plurality of slices or 3-D image data acquisitions occurs at a time preceding the zero-crossing point for longitudinal magnetization of either of the initial RF inversion pulse or the plurality of successively applied RF inversion pulses and so each of the other of the plurality of slices and 3-D image data acquisitions occurs at or following said zero-crossing point for the longitudinal magnetization.

11. (ORIGINAL) The method of claim 6, wherein the successively applied RF inversion pulses are applied in a time sequence so as to essentially maintain the magnetization of the selected tissues, fluid or body component at or about the zero-crossing point of the longitudinal magnetization.

12. (ORIGINAL) A method for magnetic resonance imaging in which it is desired to eliminate MR signals of selected tissues, fluid or body components in a target area of an object to be imaged, comprising the steps of:

applying an initial RF inversion pulse of a T1 preparatory sequence of one of an inversion-recovery technique, a saturation recovery technique or a multiple-inversion-recovery technique;

successively applying one or more RF inversions pulses of the T1 preparatory sequence; and

interleaving the inversion pulses of the initial RF inversion pulse and the one or more successively applied inversion pulses with excitation pulses associated with MR imaging process so as to allow acquisition of MR image data at or about a condition where signals from the selected tissues, fluid or body components are minimized and so as to essentially not contaminate other MR signals being acquired from the target area.

13. (ORIGINAL) A method for magnetic resonance imaging in which it is desired to eliminate MR signals of selected tissues, fluid or body components in a target area of an object to be imaged, comprising the steps of:

applying an initial RF inversion pulse of a T1 preparatory sequence of one of an inversion-recovery technique, a saturation recovery technique or a multiple-inversion-recovery technique;

successively applying one or more RF inversions pulses of the T1 preparatory sequence; and

interleaving the inversion pulses of the initial RF inversion pulse and the one or more successively applied inversion pulses with excitation pulses associated with MR imaging process so as to allow acquisition of MR image data at or about a condition where signals from the selected tissues, fluid or body components are being maintained essentially nulled.

14. (ORIGNAL) The method of claim 13, wherein the inversion recovery technique includes one of FLAIR, STIR, bright blood coronary angiography or VASO and the multiple-inversion recovery technique includes black-blood angiography.

15. (ORIGINAL) The method of either of claims 12 or 13, wherein said interleaving includes interleaving the inversion pulses and the excitation pulses so as to acquire one of a plurality of slices or 3-dimensional MR image data following in a time sequence the application of one of the applied RF inversion pulses.

16. (ORIGINAL) The method of claim 15, wherein said interleaving is performed such that one of the plurality of slices or 3-D image data acquisitions occurs at a time preceding the zero-crossing point for longitudinal magnetization of one of the applied inversion pulses and so each of the other of the plurality of slices and 3-D image data acquisitions occurs at or following the zero-crossing point for longitudinal magnetization of said one of the applied inversion pulses.

17. (ORIGINAL) The method of either of claims 12 or 13, wherein the successively applied RF inversion pulses are applied in a time sequence so as to essentially maintain the magnetization of the selected tissues, fluid or body component at or about the zero-crossing point of the longitudinal magnetization.

18. (ORIGINAL) The method of any of claims 1, 2, 12 or 13, wherein said successively applying one or more RF inversions pulses includes alternating phases of each of the successively applied RF inversion pulses, thereby minimizing the effect of inversion imperfection.

19. (ORIGINAL) The method of any of claims 1, 2, 12 or 13, wherein said successively applying one or more RF inversions pulses includes applying a multi-direcitonal de-phasing 0 gradient cycle scheme, thereby minimizing stimulated echo formation caused by non-180° character of inversion pulses.

20. (ORIGINAL) A magnetic resonance imaging system comprising:

a RF transmitter apparatus that is configured and arranged to generate RF signals having a predetermined frequency for inverting magnetization and for generating RF signals to excite the nuclei in a target region of an object to be imaged and so the generated signal pulses are applied to a target region of an object to be imaged;

a controller operably coupled to the RF transmitter apparatus, the controller being configured and arranged so as to selectively generate the RF inversion pulses in manner so as to essentially null signals from one or more selected constituents in the target region and so as to interleave the RF inversion pulses and the RF excitation pulses so that MR image data is acquired while the controller is maintaining the nulling of signals from the selected one or more constituents.